JAN/FY06

SIERRA ARMY DEPOT

California

Army Defense Environmental Restoration Program Installation Action Plan

FINAL 5 September 2006

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year restoration Installation Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Sierra Army Depot, Army Materiel Command, executing agencies, and regulatory agencies, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all major Army installation cleanup programs.

All site specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this Installation Action Plan conducted on 10 January 2005:

Company/Installation/Branch
ARCADIS G&M
CALIBRE for Sierra Army Depot
California Regional Water Quality Control Board
Department of Toxic Substances Control
Engineering and Environment, Inc., for US Army Environmental Center
Sierra Army Depot
Tetra-Tech for HQ, Army Materiel Command
US Army Environmental Center

Acronyms & Abbreviations

AEDB-R	Army Environmental Database - Restoration
ALF	Abandoned Landfill
ASR	Archive Search Report
BRAC	Base Realignment and Closure
BLDG	Building
Cal-EPA	California Environmental Protection Agency
CAMU	Corrective Action Management Unit
CBU	cluster bombs
CC	Compliance-Related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRWQCB	California Regional Water Quality Control Board
CTC	Cost-To-Complete
CTT	Closed, Transferred, or Transferring
DD	Decision Document
DERP	Defense Environmental Restoration Program
DMM	Discarded Military Munitions
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DTSC	Department of Toxic Substances Control
EE/CA	Engineering Evaluation/Cost Analysis
EFFTF	Existing Fire-Fighting Training Facility
ER,A	Environmental Restoration, Army
ERD	Enhanced Reductive Dechlorination
FFS	Focused Feasibility Study
FFSRA	Federal Facility Site Remediation Agreement
FHLDR	Former Honey Lake Demolition Range
FS	Feasibility Study
ft	feet
FY	Fiscal Year
GW	Groundwater
HE	high explosives
HLCT	Honey Lake Conservation Team
HQ	Headquarters
HRC	Hydrogen Releasing Compound
IAP	Installation Action Plan
IRA	Interim Remedial Action
IRP	Installation Restoration Program
IRZ	In-situ Reactive Zone
kg	kilograms
LBG	Lower Burning Ground
LTM	Long-Term Management
MACOM	Major Army Command
MCL	Maximum Contaminant Level
MEC	Munitions and Explosives of Concern
MEP	Master Environmental Plan
mm	millimeter

Acronyms & Abbreviations

MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
NFA	No Further Action
NPL	National Priorities List
OB/OD	Open Burning/Open Detonation
OE	Ordnance Explosives
OFFTF	Old Fire-Fighting Training Facility
PA	Preliminary Assessment
PBC	Performance-Based Contract
POL	Petroleum, Oil & Lubricants
PP	Proposed Plan
ppb	parts per billion
PS	Paint Shop Subsite
PSW	Potable Supply Well
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Royal Dutch Explosives (cyclotrimethylenetrinitramine)
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
S&R	Supervision and Review
SI	Site Inspection
SIAD	Sierra Army Depot
SLC	State Lands Commission
SSA	Southern Sites Area
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compounds
TACOM	Tank and Automotive Command
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TLB	TNT Leaching Beds
TNB	Trinitrobenzene
TNT	Trinitrotoluene
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TSA	Toxic Storage Area
UBG	Upper Burning Ground
UDP	Unidentified Pit
US	United States

Acronyms & Abbreviations

USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USACOE	US Corps of Engineers
USAEC	US Army Environmental Center
USAEHA	US Army Environmental Hygiene Agency (now USACHPPM)
USATHAMA	US Army Toxic and Hazardous Materials Agency
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
WP	White Phosphorous
ZVI	Zero-Valent Iron

Installation Information

Installation Locale: Sierra Army Depot (SIAD) is located in Honey Lake Valley of Lassen County in northeast California, approximately 4 miles west of the California-Nevada state border and 5 miles east of US Highway 395. The two largest communities near SIAD are Susanville, California (county seat of Lassen County, located 35 miles northwest of SIAD) and Reno, Nevada (located 55 miles southeast of SIAD). Other neighboring communities, all in California, include Doyle (located 8 miles south of SIAD), Herlong and the Sage Flats Area, located near the southern entrance to the main depot.

Installation Size:
Installation Acreage: 99,599.00
BRAC Acreage: 67,662.00
Acreage being transferred to other service: 660.00
Acreage being transferred to non-federal agencies: 67,002.00

List of Off-Post Properties: None

Environmental Condition of Property: 80.0 acres require protection because of the presence of Natural or Cultural Resources

Acres in Category 1:	4,552.00
Acres in Category 2:	0.00
Acres in Category 3:	57,633.00
Acres in Category 4:	5,477.00
Acres in Category 5:	0.00
Acres in Category 6:	0.00
Acres in Category 7:	0.00

Lead Organization: Base Realignment and Closure Division (BRACD)

Lead Executing Agencies:
Investigation Phase: Sierra Army Depot, Environmental Management Division
Remedial Design/Action Phase: Sierra Army Depot, Environmental Management Division

Regulatory Participation:
Federal: US Environmental Protection Agency (USEPA) defers to State
State:
- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)
- California Regional Water Quality Control Board, Lahontan Region (CRWQCB)

BRAC Closure Round: Legacy BRAC IV - 1995

Status of Redevelopment Initiative (Reuse Plan
Organization Name: Lassen County Local Reuse Auth
Plan Status: Draft Redevelopment Plan Completed
Development Plan Date: 199812

Existing Legal Agreements/Interim Leases: None

Significant Base Tenants: None

Projected Date of Final Transfer of Property: 200709

National Priorities List (NPL) Status:
Non-NPL, off-post contamination
Interagency Agreement, Three Party (State and Army) (FFSRA)

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/ Technical Assistance for Public Participation (TAPP) Status: The RAB was established in November 1996 and meets three times annually.

Installation Program Summaries:
IRP
Contaminants of Concern: Chlorinated Solvents, DMM, Explosives, MEC, Metals, Pesticides, Petroleum Hydrocarbons, SVOCs, TCE, VOCs
Media of Concern: Groundwater, Soil
Estimated date for RIP/RC: 2000/2008
Funding to Date (thru FY05): $63,414K (includes Active and BRAC)
Current year funding (FY06): $2,133K (Active only)
Cost-to-Complete (FY07+): $15,822K (Active only)

MMRP
Contaminants of Concern: MEC
Media of Concern: Groundwater, Soil
Estimated date for RC: 2014
Funding to Date (thru FY05): $100K
Current year funding (FY06): $210K
Cost-to-Complete (FY07+): $71,650K

BRAC
Contaminants of Concern: DMM
Media of Concern: Soil
Estimated date for RC: 2008
Funding to Date (thru FY05): $63,414K (includes Active and BRAC)
Current year funding (FY06): $2,779K (BRAC only)
Cost-to-Complete (FY07+): $13,630K (BRAC only)

Transfer Summary

Total Installation Acres: 99,599.00

BRAC Acres: 67,662.00

Parcel Name: OE
Recipient Organization: Center for Urban Watershed Renewal
Acres: 4,486.33
Transfer strategy: Conservation Conveyance
Current land use: Lakebed, open space
Future land use: Lakebed, open space
Transfer date: 30 Sep 2010

Parcel Name: Airfield
Recipient Organization: Lassen Local Reuse Authority
Acres: 540.61
Transfer strategy: Economic Development Conveyance (EDC)
Current land use: Airfield
Future land use: Airfield, industrial, commercial
Transfer date: 30 Sep 2030 Indefinite

Parcel Name: North East Shore RE/Berm
Recipient Organization: Lassen Local Reuse Authority
Acres: 135.54
Transfer strategy: Economic Development Conveyance (EDC)
Current land use: open space
Future land use: open space
Transfer date: 30 Sep 2006

Cleanup Program Summary

***Installation Historic Activity*:** In 1942, SIAD began operations involving reserve storage of supplies and inert materials belonging to the Treasury Department. The missions of receipt, storage, and issue of explosives were assigned to the depot upon completion of the large igloo Storage Area. In 1954, the missions of receipt, storage, and issue of guided missiles and propellant fuels were added.

Activity at the site has fluctuated with the involvement of the United States in active military conflicts. The work force at the site was at an all-time high of 2,327 during the Korean conflict. The work force rose from a low of 974 to a high of 1,577 in 1967 during the Vietnam conflict.

On 30 May 1991, the Federal Facility Site Remediation Agreement (FFSRA) was signed between the Army; the State of California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC); and Cal-EPA, Regional Water Quality Control Board (CRWQCB). The FFSRA identified and prioritized 22 sites at SIAD and placed them into three different groups. A 23rd site was later added to the investigation schedule. Group I contained the sites with the highest contamination potential while Group II, and Group III have progressively lower contamination potential. The FFSRA placed tight schedules on the start date of investigations and the delivery date of primary documents for each group of sites.

In 2003, Sierra withdrew their RCRA Part B permit application and moved toward the current mission of our joint logistics platform.

IRP

- Prior Year Progress: Completed 36 of 38 sites bringing them to NFA, RC or RIP.
- Future Plan of Action: Continue monitoring operations at SIAD-001, 002, 020 and bring sites SIAD-003, 010, 014, and 022 to RC or RIP under the existing PBC contract. Continue monitoring at all sites after contract completion in 2013.

MMRP

- Prior Year Progress: The SI was completed on sites SIAD-006-R-01 through SIAD-013-R-01. The SI determined that no further action was necessary for sites SIAD-006-R-01 and SIAD-008-R-01.
- Future Plan of Action: The RI/FS will begin in October 2007 for the remaining sites.

BRAC

- Prior Year Progress: The RI/FS was initiated in September 2002.
- Future Plan of Action: The RI/FS will end in June 2006. A RD, RA(C) and LTM will follow. A ROD is expected to be signed by the BRAC Division in September 2007.

SIERRA ARMY DEPOT

Installation Restoration Program

IRP Summary

Total AEDB-R IRP Sites/Sites RC: 38/32

AEDB-R Site Types:

4 Burn Areas
1 Contaminated Building
1 Contaminated Soil Pile
5 Explosive Ordnance Disposal Areas
2 Other
5 Spill Site Areas
1 Surface Disposal Area
1 Waste Line
1 Chemical Disposal Area
2 Contaminated Groundwaters
3 Disposal Pits/Dry Wells
5 Landfills
1 Sewage Effluent Settling Ponds
5 Storage Areas
1 Surface Impoundment/Lagoon

Contaminants of Concern: Chlorinated Solvents, DMM, Explosives, OE, Metals, Pesticides, Petroleum Hydrocarbons, SVOCs, TCE, VOCs

Media of Concern: Groundwater, Soil

Completed REM/IRA/RA:

SIAD-001: Soil composting, soil removal
SIAD-002: Soil removal
SIAD-007: Soil removal and bio-venting
SIAD-011: Soil removal
SIAD-012: Soil removal
SIAD-015: Soil removal
SIAD-032: Soil removal

Total IRP Funding:

Prior Years (thru FY05):	$63,785K
Current year funding (FY06):	$ 2,133K
Future Requirements (FY07+):	$15,822K
Total:	$81,740K

Duration of IRP:

Year of IRP Inception: 1989
Year of IRP RIP/RC: 2000/2008
Year of IRP Completion including LTM: 2036

IRP Contamination Assessment

IRP Contamination Assessment Overview: Past operations at SIAD have resulted in the generation and disposal of various types of contaminants across the installation. Solvents, heavy metals, and explosives are the primary contaminants. There is groundwater contamination above MCLs at SIAD-001, 002, 003, 014. Off-post groundwater contamination (TCE) above the MCL was found at SIAD-014. An Interim Remedial Action (IRA) of pump-and-treat is operating while the pilot study evaluates potential replacement of the pump-and-treat with an in-situ groundwater treatment system. Soil remediation has been performed at SIAD-001, 002, 003, 007, 011, 012, and 015. Sites requiring significant soil remediation are SIAD-010 and 022. The table on the following pages lists the previous environmental studies conducted for SIAD.

The Master Environmental Plan (MEP) identified 22 sites with contamination potential. For the FFSRA, the 22 sites were separated into three Groups (Group I, Group II, and Group III) based on risk evaluations conducted by the RPMS. In response to the MEP and the anticipated signing of the FFSRA, investigations began in September 1989 for the first five highest priority sites named Group I (formerly named Phase I).

Group I
- TNT Leaching Beds (SIAD-001)
- DRMO Trench Area (SIAD-002)
- Abandoned Landfill (SIAD-003)
- Construction Debris Landfill (SIAD-004)
- Chemical Burial Site (SIAD-005)
- Honey Lake (SIAD-006)

Group II
- Existing Fire-Fighting Training Facility (SIAD-007)
- Active Sanitary Landfill (SIAD-008) – not eligible for ER,A funds
- Ammunition Demilitarization and Renovation Area (SIAD-009)
- Upper Burning Ground - Hansen's Hole (SIAD-010)
- Diesel Spill Area (SIAD-011)
- Building 1003 Area (SIAD-012)

Group III
- Old Fire Fighting Training Facility (SIAD-013)
- Building 210 Area (SIAD-014)
- Large Sewage Treatment Ponds (SIAD-015)
- Lower Burning Ground (SIAD-016)
- Nike Missile Fuel Disposal Site A (SIAD-017)
- Nike Missile Fuel Disposal Site B (SIAD-018)
- Toxic Storage Area at Building 578 (SIAD-019)
- 1960 Demolition Area (SIAD-020)
- Open Popping Furnace (SIAD-022)

Additional sites were added; some sites were declared ineligible and in 1995, some sites were moved to the BRAC program.

IRP Contamination Assessment

IRP Cleanup Exit Strategy: With the award of the PBC, the rate of progress with additional work has shifted from the turnaround time of the contracting process (preparing scopes of work, negotiating and awarding of contracts, and costly, overly stringent site safety plans, are a typical source of delays) to the rate of response to the document submittals by DTSC. The following actions will be taken to reach RC at the sites.

- SIAD 001/002 – TNT Leaching Beds/DRMO Trench Area - Records of Decision (ROD) have been signed and implemented at both sites – both sites are in Monitored Natural Attenuation (MNA). MNA is being enhanced with in-situ Enhanced Reductive Dechlorination (ERD) in order to preserve the approved remedy.
- SIAD 003 – ALF/SSA - An in-situ ERD remedy will be implemented for the contaminated groundwater plumes at the site that will minimize long-term monitoring.
- SIAD 010 – Upper Burning Ground - After removing DMM from contaminated soil, contaminated soil will be removed and placed into Hansen's Hole (after DMM has been removed) and a Corrective Action Management Unit (CAMU)will be constructed – this is a consolidation unit and avoids costly off-site disposal.
- SIAD 014 – Building 210 - An in-situ ERD solution to remediate the contaminated groundwater will likely be implemented.
- SIAD 020 – 1960 Demolition Area - A fence around the site will be installed to improve safety. This is not required by the ROD at the site and is being done voluntarily by the Army.
- SIAD 022 – Old Popping Furnace - After removing DMM from the area of contamination, contaminated soil will be excavated and an on-site CAMU will be constructed.

Previous Studies

1983

• Reassessment of Sierra Army Depot, Herlong, California. Report No. 149R*. Prepared by Environmental Science and Engineering, Inc., September

1988

• Master Environmental Plan for the Sierra Army Depot. Prepared by Energy and Environmental Systems Division, Argonne National Laboratory, October

1989

• Public Involvement and Response Plan, Sierra Army Depot, Herlong, California. Prepared by Hunter/ESE, Inc., April

1990

• Phase I Remedial Investigation/Feasibility Study, Final Sampling Design Plan, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, March
• Phase I Remedial Investigation/Feasibility Study, Final Quality Assurance/Quality Control Plan, Sierra Army Depot, Lassen County, California . Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, March
• Phase I Remedial Investigation/Feasibility Study, Final Health and Safety Plan, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, March
• Phase I Remedial Investigation/Feasibility Study, Remedial Investigation, Appendices A - F, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, September
• Phase I Remedial Investigation/Feasibility Study, Draft Final Interim Remedial Measures Evaluation, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, October

1991

• *Phase II Remedial Investigation/Feasibility Study, Final Health and Safety Plan, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., March
• *Phase II Remedial Investigation/Feasibility Study, Final Sampling Design Plan, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., April
• *Phase II Remedial Investigation/Feasibility Study, Final Quality Assurance/Quality Control Plan, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., April
• *Phase I Remedial Investigation/Feasibility Study: Final Remedial Investigation, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, October
• Phase I Remedial Investigation/Feasibility Study: Final Remedial Investigation, Appendices G-Q, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc. and E.C. Jordan, October

Previous Studies

1992

- *Group I Follow-Up Remedial Investigation/Feasibility Study, Final Sampling Design Plan Addendum, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., February
- *Group I Follow-Up Remedial Investigation/Feasibility Study, Final Quality Assurance/Quality Control Plan Addendum, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., February
- *Group I Follow-Up Remedial Investigation/Feasibility Study, Final Health and Safety Plan Addendum, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., February
- *Group II Remedial Investigation/Feasibility Study, Final Remedial Investigation, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., July
- *Group II Remedial Investigation/Feasibility Study, Final Remedial Investigation Appendices, Sierra Army Depot, Lassen County, California. James M. Montgomery Consulting Engineers, Inc., July
- *Group III Remedial Investigation and Feasibility Study, Final Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, September
- *Group III Remedial Investigation and Feasibility Study, Final Health and Safety Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, September
- *Group III Remedial Investigation and Feasibility Study, Final Quality Assurance Project Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, September
- *Group III Remedial Investigation and Feasibility Study, Total Environmental Program Support Final Quality Assurance Project Plan (Rev. No. 1), Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, October
- *Group II Remedial Investigation/Feasibility Study, Final Feasibility Study, Existing Fire-Fighting Training Facility, Sierra Army Depot, Lassen County, California. Prepared by James M. Montgomery Consulting Engineers, Inc., December

1993

- *Group I Remedial Investigation/Feasibility Study, Draft Final Feasibility Study, TNT Leaching Beds Area and Diesel Spill Area Groundwater, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, April
- *Group I Remedial Investigation/Feasibility Study, Draft Final Feasibility Study, TNT Leaching Beds Area and Diesel Spill Area Soils, Sierra Army Depot, Lassen County, California . Prepared by Montgomery Watson, May
- *1992 Group I Follow-Up Remedial Investigation/Feasibility Study, Draft Final Remedial Investigation, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, May
- *1992 Group I Follow-Up Remedial Investigation/Feasibility Study, Draft Final Remedial Investigation, Appendices Volume 1, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, May

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- *1992 Group I Follow-Up Remedial Investigation/Feasibility Study, Remedial Investigation, Appendices Volume II, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, May
- *Sierra Army Depot, Installation Restoration Program, Proposed Plan for Existing Fire Fighting Training Facility*. Prepared by Sierra Army Depot, June
- *Group I and II Follow-Up Remedial Investigation/Feasibility Study, Draft Final Sampling Design Plan, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, July
- *Proposed Remedial Plan for Existing Fire Fighting Training Facility, Sierra Army Depot. Prepared by USAEC (Aberdeen), July
- *Group I and II Follow-Up Remedial Investigation/Feasibility Study, Draft Final Quality Assurance/Quality Control Plan, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, July
- *Group I and II Follow-Up Remedial Investigation/Feasibility Study, Draft Final Health and Safety Plan, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, July
- *Group III Remedial Investigation and Feasibility Study, Final Interim Remedial Measures Evaluation, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, December

1994

- *Final Record of Decision/Remedial Action Plan for Existing Fire-Fighting Training Facility, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, February
- *Final Work Plan for Existing Fire-Fighting Training Facility, Bioventing Treatability Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Tetra Tech, March
- *Final Chemical Data Acquisition Plan for Existing Fire-Fighting Training Facility, Bioventing Treatability Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Tetra Tech, March
- *Final Site Safety and Health Plan for Existing Fire-Fighting Training Facility, Bioventing Treatability Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Tetra Tech, March
- *Permeability and Respiration Test Report for Existing Fire-Fighting Training Facility, Bioventing Treatability Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Tetra Tech, May
- *Final Proposed Plan for Seven Sites, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, May
- *Final Remedial Investigation, Volume I of II, Group III A Sites, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, June
- *Final Remedial Investigation, Volume II of II, Appendices, Group III A Sites, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, June
- *Final Remedial Investigation, Volume I of II, Group III B Sites, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, June

1994 (continued)

• *Final Remedial Investigation, Volume II of II, Appendices, Group III B Sites, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, June
• Final Design, Design Analysis for Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson, July
• Final Chemical Data Acquisition Plan for Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson , July
• Final Site Safety and Health Plan for Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson, July
• Final Health and Safety Design Analysis for Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson, July
• *Final Investigation-Derived Waste Management Plan, Groups I, II, and III Remedial Investigation and Feasibility Studies, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, July
• *Draft Final Remedial Investigation, Group I and II Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December
• *Technical Memorandum Regarding Building 210 Area Extraction Well Installation and Development and Non-Usability, Group III Remedial Investigation and Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, December

1995

• Final Corrected Design, Design Analysis, Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson , January
• Final Corrected Design, Specification No. 94-45, Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson, January
• Draft Final Sampling Plan Addendum, TNT Leaching Beds Area Groundwater Monitoring Implementation, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Harding Lawson Associates, February
• Final Corrected Design, Design Analysis, Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson, April
• *Final Treatability Study Report, Existing Fire-Fighting Training Facility, Bioventing Treatability Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, May
• Final Corrected Design, Specification No. 9545, Underground Storage Tank Replacement, Sierra Army Depot, California. Prepared by Montgomery Watson, May 1995.
• *Group III Stage 3 Remedial Investigation-Derived Wastes, Sierra Army Depot. Prepared by Harding Lawson Associates, May
• Final Record of Decision/Remedial Action Plan, Seven Sites, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, September
• *Final Field Sampling Design Plan, Group III Remedial Investigation and Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, October

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• Final Building 210 Area Follow-On Remedial Investigation, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, December

1996

• *Draft Final Feasibility Study Report, Group III B Sites, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, January
• Proposed Plan for Nine Sites at Sierra Army Depot, Installation Restoration Program. Prepared by Harding Lawson Associates, February
• Draft Final Initial Monitoring Report, Volume I of II, TNT Leaching Beds Area Groundwater Monitoring Implementation, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Harding Lawson Associates, February
• Draft Final Initial Monitoring Report, Volume II of II, Appendices, TNT Leaching Beds Area Groundwater Monitoring Implementation, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Harding Lawson Associates, February
• Focused Feasibility Study, Draft Final, Building 1003 Area, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, February
• *Final Work Plan Addendum, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, February
• *Final Site Safety and Health Plan Addendum, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, February
• *Final Chemical Data Acquisition Plan Addendum, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, February
• Draft Final Quarterly Groundwater Monitoring Report, First Quarter, TNT Leaching Beds Area Groundwater Monitoring Implementation, Sierra Army Depot, Lassen County, California. Prepare by Montgomery Watson, March
• *Technical Memorandum, Respiration Test No. 1, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, May
• Base Realignment and Closure (BRAC) Cleanup Plan, Version 1, Herlong and Honey Lake Reuse Parcels, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, May
• Draft Final Sampling Plan, Abandoned Landfill and Southern Sites Area Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County California. Prepared by Montgomery Watson, June
• Draft Final Remedial Investigation, DRMO Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, June
• Draft Final Remedial Investigation Report, Volume II of II, DRMO Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, June

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• Draft Final Delivery Order (PRAC) Diesel Spill Area Remediation, Sierra Army Depot, Lassen County, California. Prepared by USACOE, Sacramento District, July
• Draft Final Delivery Order (PRAC) TNT Leaching Beds Area Remediation, Sierra Army Depot, Lassen County, California. Prepared by USACOE, Sacramento district, July
• *Project Work Plan for Herlong Reuse Parcel, Sierra Army Depot. Prepared by Weiss Associates (for USACOE, Sacramento district), August
• Final Record of Decision/Remedial Action Plan, Nine Sites, Total Environmental Program Support, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, October
• Field Sampling Plan, Old Popping Furnace, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, October
• Safety and Health Phase-Out Report, Sewer Line Repair, Sierra Army Depot, Herlong, California. Prepared by CAL, Inc. (for USACOE, Sacramento district), November
• *Technical Memorandum, Soil Gas Monitoring Event No. 2, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December
• *Letter Report, Surface and Near-Surface Soil Sampling, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December

1997

• Draft Final Feasibility Study, Trench Area Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, January
• *Final Report, Subsurface Soil Sampling Results, Vol. II of II, Underground Storage Tank Locations, Herlong Reuse Parcel at Sierra Army Depot, Herlong, California. Prepared by The Weiss Associates Team (for USACOE, Sacramento district), January
• Draft Final Phase I Field Operations Plan, Building 210 Area Engineering Evaluation and Cost Analysis Predesign Study, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, March
• Final Environmental Baseline Survey CERFA Report, Sierra Army Depot Ruse Parcels, Lassen County, California. Prepared by Harding Lawson Associates, March
• Revised Final Task Order (PRAC) TNT Leaching Beds Area Remediation, Sierra Army Depot, Lassen County, California. Prepared by USACOE, Sacramento district, April
• Revised Final Task Order (PRAC) Diesel Spill Area Remediation, Sierra Army Depot, Lassen County, California. Prepared by USACOE, Sacramento district, April
• Base Realignment and Closure Cleanup Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, April
• Task Order (SmART) Building 1003 Area Remediation, Sierra Army Depot, Lassen County, California. Prepared by USACOE, Sacramento district, May
• Task Order (SmART) Large Sewage Treatment Ponds Remediation, Sierra Army Depot, Lassen County, California. Prepared by USACOE, Sacramento district, May
• *Technical Memorandum, Respiration Test No. 2, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, June

1997 (continued)

• Proposed Plan for DRMO Trench Area at Sierra Army Depot, Installation Restoration Program. Prepared by Sierra Army Depot, July
• Sampling and Analysis Plan, Large Sewage Treatment Ponds and Building 1003 Area Soil Remediation Projects, Sierra Army Depot, Herlong, California. Prepared by CAL, Inc. (for USACOE, Sacramento district), July
• Investigation-Derived Waste Management, Phase I Field Operations, Building 210 Area Engineering Evaluation and Cost Analysis Predesign Study. Prepared by Harding Lawson Associates, July
• *Final Field Sampling Design Plan, Group III Remedial Investigation and Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, September
• Final Project Work Plan, TNT Leaching Beds Area Remediation, Sierra Army Depot, California. Prepared by Kvaerner Environmental, October
• Draft Final Remedial Investigation, Volume I of III, Abandoned Landfill and Southern Sites Area Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December
• Draft Final Remedial Investigation, Volume II of III, Abandoned Landfill and Southern Sites Area Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December
• Draft Final Remedial Investigation, Volume III of III, Appendices I-P, Abandoned Landfill and Southern Sites Area Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December

1998

• TNT Leaching Beds Area Remediation, Treatability Phase Report, Sierra Army Depot, Lassen County, California. Prepared by Kvaerner Environmental, January
• *Environmental Assessment for the Disposal and Reuse of the BRAC Parcels, Sierra Army Depot, California. Prepared by USACOE (Mobile district), February
• Final Record of Decision/Remedial Action Plan, DRMO Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, March
• Final Site Soil Closure Report, Building 1003, Sierra Army Depot, Herlong, California. Prepared by CAL, Inc. (for USACOE), April
• *Close-Out Report, Existing Fire-Fighting Training Facility Debris Removal, Sierra Army Depot, Lassen County, California. Prepared by PSC Associates, Inc., April
• Final Project Work Plan, Firing Range Berm, Sierra Army Depot, Herlong, California. Prepared by CAL, Inc. (for USACOE), May
• *Technical Memorandum, Respiration Test No. 3, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, June
• Field Sampling Plan, Old Popping Furnace, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, June
• Draft Final 1997 Annual Groundwater Monitoring Report, TNT Leaching Beds Area, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, June

1998 (continued)

• Draft Final Annual Groundwater Monitoring Report, 1997, TNT Leaching Beds Area Groundwater Monitoring Implementation, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, July

• Closure Report, TNT Leaching Beds Area Remediation, Paint Shop Subsite, Sierra Army Depot, Lassen County, California. Prepared by Kvaerner Environmental (for USACOE, Sacramento district), August

• Draft Final DRMO Trench Area (Soils), Sierra Army Depot, Herlong, California . Prepared by USACOE, Sacramento district, October

• *Technical Memorandum, Confirmation Soil Sampling, Existing Fire-Fighting Training Facility, Bioventing System Sampling and Support, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, November

• Final Record of Decision/Remedial Action Plan, Seven Sites, Explanation of Significant Difference, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, November

• Draft Final Sampling Plan, Abandoned Landfill and Southern Sites Area 1999 Follow-Up Remedial Investigation/Feasibility Study, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson, December

1999

• Pre-Excavation Field Sampling Analysis Results, DRMO Trench Area (Soils) Phase I, Sierra Army Depot, Herlong, California. Prepared by USACOE, Sacramento District, January

• Draft Final Report, Four Preliminary Sites, Vol I of II, Sierra Army Depot, Herlong, Lassen County, California. Prepared by USACOE, Sacramento district, February

• Draft Final Report, Four Preliminary Sites, Vol II of II, Sierra Army Depot, Herlong, Lassen County, California. Prepared by USACOE, Sacramento district, February

• Closure Report, Vol. I of II, TNT Leaching Beds Area Remediation, Sierra Army Depot, Lassen County, California. Prepared by Kvaerner Environmental, March

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• Final Submittal, DRMO Trench Area (Soils), Sierra Army Depot, Herlong, California. Prepared by USACOE, Sacramento district, June

• Draft Final Field Sampling Design Plan, Upper Burning Ground Follow-on Remedial Investigation, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, September

• Draft Final Building 210 Area Engineering Evaluation and Cost Analysis, Sierra Army Depot, Lassen County, California. Prepared by Harding Lawson Associates, October

2000

• Final Site Closure Report, Existing Fire-Fighting Training Facility, Sierra Army Depot, Lassen County, California. Prepared by Montgomery Watson and Innovative Technical Solutions, Inc., January

• Asbestos Survey for Sierra Army Depot, Lassen County, California. Issued by USACOE, Sacrament district, October

Previous Studies

2001

• *Revised Final, Environmental Baseline Survey CERFA Report, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, March
• Draft Final Abandoned Landfill and Southern Sites Area, 1999 Follow-up Remedial Investigation, Volumes I & II, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, June
• Final Upper Burning Ground Follow-on Remedial Investigation, Volumes I & II, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, August

2002

• Final Field Sampling Design Plan for the Old Popping Furnace Follow-on Remedial Investigation, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Abandoned Landfill and Southern Sites Area Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Building 210 Area Enhanced Biodegradation Pilot Study Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Building 210 Area Pre-Design Plume Assessment Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Abandoned Landfill and Southern Sites Area Groundwater Plume Delineation in the Area of Potable Supply Well PSW-02 Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Upper Burning Ground Groundwater Evaluation Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Upper Burning Ground and Old Popping Furnace - Additional Data Collection Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Final Abandoned Landfill and Southern Sites Area Plume Migration Assessment Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July
• Ordnance and Explosive Engineering Evaluation/Cost Analysis(EE/CA), Honey Lake Area, Sierra Army Depot, Lassen County, California. Prepared by Earth Tech, July
• Final Building 210 Area Zero-Valent Iron Pilot Study, Follow-on Enhanced Biodegradation Pilot Study and Additional Data Collection Work Plan, Sierra Army Depot, Lassen County, California. Prepared by Harding ESE, July

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• Final Focused Feasibility Study for the Upper Burning Ground, Sierra Army Depot, Herlong, California. Prepared by ARCADIS, April
• Final Focused Feasibility Study for the Equipment Yard, Sierra Army Depot, Herlong, California. Prepared by ARCADIS, April
• Final Old Popping Furnace Area Remedial Investigation and Feasibility Study, Sierra Army Depot, Herlong, California. Prepared by ARCADIS, April
• Proposed Plan for Three Sites, Sierra Army Depot, Herlong, California. Prepared by ARCADIS, April

Note: * Documents are related to the BRAC Program.

SIERRA ARMY DEPOT

Installation Restoration Program
Site Descriptions

SIAD-PBC
PBC CONTRACT SIERRA AD

SITE DESCRIPTION

This AEDB-R site was opened to address the PBC at Sierra AD. Sites included under the PBC are SIAD-001, SIAD-002, SIAD-003, SIAD-010, SIAD-014, SIAD-020, SIAD-022, and SIAD-058.

CLEANUP STRATEGY

See individual site descriptions.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installation

RRSE: Medium

CONTAMINANTS OF CONCERN: VOCs, Metals, DMM, Explosives

MEDIA OF CONCERN: Soil Groundwater,

PHASES	Start	End
PA	198804	199801
RA(C)	200309	200809
LTM	200810	201209

RC: 200809

SIAD-001
TNT LEACHING BEDS

SITE DESCRIPTION

SIAD-001 is the TNT Leaching Beds Area, comprised of the TNT Leaching Beds and the Paint Shop.

The TNT Leaching Beds consists of two former TNT leaching beds used for disposal of wastewater from the ammunition shell dismantling and washout facility. The two leaching beds were unlined shallow depressions ~50 x 50 ft and 50 x 100 ft in size. The water used to flush out explosives was transported through a concrete trench leading to the TNT leaching beds where it was allowed to evaporate and infiltrate the soils. The washout facility was in operation from 1940 to 1949 and at maximum capacity could process and reclaim TNT from eight hundred 105mm shells per day. Paint Shop operations released TCE over time.

The RI/FS was completed in 1993, and identified explosives and VOCs in the soil and groundwater. The ROD was signed in September 1995. The selected remedy included composting of explosives contaminated soils, institutional controls and monitored natural attenuation (MNA) for the groundwater contamination. Groundwater monitoring started in 1996.

The composting action was started in December 1997 and was completed in December 1998. Final site soil closure report was approved by State regulators in FY99. CERCLA reviews were started in 2001.

In summer 2004, an In situ Reactive Zone (IRZ) demonstration program (molasses injections) was implemented to accelerate the degradation of VOCs, (primarily TCE) in groundwater.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: High

CONTAMINANTS OF CONCERN: Explosives (2, 4, 6 TNT; 1, 3, 5 TNB), VOCs

MEDIA OF CONCERN: Groundwater

PHASES	Start	End
PA	198804	198810
SI	198804	198810
RI/FS	198909	199304
RD	199501	199611
RA(C)	199508	199811
LTM	201401	202501

RC: 200309

CLEANUP STRATEGY

Maintain the IRZ and continue the groundwater monitoring (approximately 23 to 35 wells are sampled on an annual basis). The next five-year review will be in 2006.

SIAD-002
DRMO TRENCH AREA

SITE DESCRIPTION

The Defense Reutilization and Marketing Office (DRMO) Trench Area consisted of an open trench ~290 x 40 x 10 ft deep, the Burn and Debris Area and the Active DRMO Yard.

The trench was used for the disposal of wood pallets, cardboard tubing, waste oil, sludge, and solvents. The site was used extensively from 1942 to 1973 and in limited capacity from 1973 to 1987. Between 1942 and 1973, ~190 liters per day of waste oils, sludge, solvents, and cleaning fluids from the vehicle maintenance activities were disposed of and burned in the DRMO Trench Area.

The RI/FS was completed in February 1997. The ROD was signed in March 1998, and called for soil removal, operation of an SVE system and MNA.

The Burn and Debris area had soil removed for off-site disposal in December 1999; therefore, metals are no longer a contaminant of concern. Groundwater contamination is monitored to assess MNA. Five additional groundwater monitoring wells were installed in FY00. Soil vapor extraction (SVE) and bioventing within the open trench and a portion of the Active Yard began operation in September of 2000.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: High

CONTAMINANTS OF CONCERN: VOCs, SVOCs, TCE, Petroleum Hydrocarbons

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	198804	198810
SI	198804	198810
RI/FS	198909	199612
RD	199808	199907
RA(C)	199908	200009
RA(O)	200010	200309
LTM	201401	203101

RIP: 200010
RC: 200309

In summer 2004, an IRZ demonstration program (molasses injections) was implemented to accelerate the degradation of VOCs, (primarily TCE) in groundwater.

CLEANUP STRATEGY

Continue to operate SVE and bioventing system for soils, groundwater monitoring (approximately 15 to 24 wells are sampled on an annual basis), and maintain the IRZ. The next five-year review will be in 2006.

SIAD-003
ABANDONED LANDFILL
(AND SOUTHERN SITES AREA)

SITE DESCRIPTION

SIAD-003 is made up of the Abandoned Landfill and the Southern Sites Area.

The Abandoned Landfill (ALF) was used as the main disposal area for SIAD domestic wastes from the early 1940s to 1965. The primary method of disposal was waste burning followed by spreading and burning of the resulting residue. The ALF is a trench type landfill with no liner or leachate collection system. The dimensions of this site are approximately 1,600 by 1,500 ft (approximately 55 acres).

The Southern Sites Area (SSA) is located south of the ALF and north of the potable supply wells PSW-02 and PSW-08. This area includes the Equipment Yard, Equipment Maintenance Yard, Fuel Sump Area, Former Officer's Club Pool and Wash Rack Area. Some of these areas are still active, however; the contamination is from past activities.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: High

CONTAMINANTS OF CONCERN: VOCs, Metals, Chlorinated Solvents, Pesticides

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	198804	198810
SI	198804	198810
RD	200308	200508
RA(C)	200308	200709
LTM	201401	203601

RC: 200709

The RI/FS began in 1990. Groundwater under the ALF and the SSA is contaminated with TCE and TPH. Limited areas of the Equipment Yard are contaminated with pesticides in soil, and have been addressed in a separate FFS.

Because of previous TCE detections, monitoring of potable supply wells is ongoing. In FY03, a preliminary GW model and a slug/pump test were completed, and six new guard wells were installed.

Perchlorate was detected (8 ppb) in well ALF-05-MWA in Jan 2003; however, downgradient wells and adjacent wells did not detect perchlorate. There have been no perchlorate detections in subsequent sampling events.

In summer 2004, an in situ Reactive Zone (IRZ) pilot study (molasses injections) was implemented to evaluate the technology to degrade VOCs (primarily TCE) in groundwater.

SIAD-003
ABANDONED LANDFILL
(AND SOUTHERN SITES AREA) (PAGE 2 OF 2)

The Equipment Yard is included in the Three Sites ROD, which was signed in 2005. The proposed soil remedy for the Equipment Yard is "hot spot" removal and off-site disposal (expected in FY06).

CLEANUP STRATEGY

Completion of the FS is anticipated in FY06.

Groundwater monitoring is performed quarterly to assess contaminant concentrations (approximately 18 to 32 wells are sampled on a quarterly basis). Approximately 55 wells are at the site.

SIAD-010
UPPER BURNING GROUND - HANSEN'S HOLE

SITE DESCRIPTION

The Upper Burning Ground (UBG) is a 4,030 acre area located north of the main depot. The site was used to burn primers, fuses, propellants, pyrotechnics, flare materials, and high explosives that could not be detonated. The site was also used as an open demolition area.

Six past activity sub-sites comprise the UBG IRP site. These sub- sites are: Hansen's Hole; Old Demolition Area; Open Trenches and Ash Pile; and the north and south extension of the Upper Burn Area and the Lower Burn Area. The remaining UBG area will be remediated under MMRP and/or CC programs (RCRA-closure).

The RI work at these six sub-sites began in 1990. Additional RI work was completed in FY01. The RI has identified metals contamination in the soil and the groundwater contains naturally occurring arsenic at high concentrations.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: High

CONTAMINANTS OF CONCERN: Metals, DMM

MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	198804	198810
SI	198804	198810
RI/FS	199009	200510
RD	200308	200511
RA(C)	200511	200606
LTM	201101	203606

RC: 200606

Production activities stopped in September 2001. SIAD withdrew the RCRA Part B Permit in May 2003 and is currently negotiating with the State for closure requirements. Burn activities at the Demolition Area and Lower Burning Area are allowed on an emergency basis only.

The FFS was finalized in FY04. The PP was completed in 2004. The ROD was signed in 2005 and called for removal of DMM and removal of metals-contaminated soil, and placement of the metals-contaminated soil from the six sub-sites in a CAMU in Hansen's Hole.

CLEANUP STRATEGY

Surface DMM in Hansen's Hole will be removed and a CAMU will be constructed in Hansen's Hole. It is anticipated the construction of the CAMU will be completed by June 2006.

The CAMU will require long-term management, which includes routine maintenance, groundwater monitoring, and five-year reviews.

SIAD-014
BUILDING 210 AREA (PAGE 1 OF 2)

SITE DESCRIPTION

The Building 210 Area is located near the southeast corner of SIAD and includes the areas adjacent to Buildings 208, 209 and 210.

Bldg 210 was used as a vehicle maintenance facility from 1942 until 1949. A popping furnace was installed in 1949 and was used for the demilitarization of small-arms ammunition during the 1950s and 1960s and was deactivated by 1979. Additional activities included sand blasting, spray painting, steam cleaning, powder packaging, and tank engine fogging.

Waste generated at the site included degreasing solvents, oils, sludge, and residues from the popping furnace operations.

Buildings adjacent to Bldg 210 were used for vehicle maintenance from the 1940s until 1973.

RI was completed in 1995 and indicated TCE contamination up to 1,800 ppb in groundwater that has migrated off-post to the south. Approximately 51 acres of land off-post have been impacted by groundwater contamination.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: Medium

CONTAMINANTS OF CONCERN: TCE

MEDIA OF CONCERN: Groundwater

PHASES	Start	End
PA	198804	198810
SI	198804	198810
RD	200308	200509
RA(C)	200308	200712
LTM	201401	203601

RC: 200712

An EE/CA was completed in FY00. An interim groundwater pump-and-treat system was installed and began operation in FY00. This is planned to operate until the final remedy is implemented.

Numerous pilot studies are underway at this site including zero-valent iron (ZVI) and enhanced bioremediation (HRC). These pilot studies are summarized below:

- November 2000: HRC pilot study - not effective.
- October 2001: micro-scale ZVI pilot study - small decrease of TCE, but rebounded, results inconclusive.
- July 2002: follow-on HRC pilot study - slight decrease in TCE but no degradation products.
- May 2003: follow-on micro-scale ZVI pilot study - steady decrease of TCE.

In summer 2004, an IRZ pilot study (molasses injections) was implemented to evaluate the technology to degrade VOCs (primarily TCE) in groundwater. An SVE pilot test is

planned for FY06 (in lieu of the nano-scale ZVI pilot test, which had been previously proposed).

CLEANUP STRATEGY

The FS will incorporate data from the pilot studies and the groundwater treatment study and should be completed in FY07. It is anticipated that the RIP may be achieved by December 2007.

Groundwater monitoring is performed quarterly to fulfill the discharge requirements of the pump-and-treat system and to support the assess contaminant concentrations (approximately 58 to 74 wells are sampled on a quarterly basis).

SIAD-020
1960 DEMOLITION AREA

SITE DESCRIPTION

The 1960 Demolition Area is located in the northern portion of SIAD. The site is ~1,700 x 2,000 ft (approximately 80 acres). This area was developed during the 1960s when the UBG demolition area was closed for construction. During 1960-1961, a group event of 36, 500-pound bombs were detonated at a rate of 12 groups per day (432 bombs per day). Some of the metal fragments from this activity remain on the surface today.

CS tear gas grenades were also detonated at a rate of 200 to 248 pounds per day for a 3 month period in 1961. During the 1970s, NIKE Hercules XM-30 motors were fired in silos on the site. The solid-based propellant was burned in the silos during the firings. Approximately 24 surface depressions (trenches) created by detonated bombs are located at the 1960 Demolition Area. A review of aerial photographs indicates the trenches are 300-500 feet long, 150 feet wide and up to 20 feet deep.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: Medium

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	198804	198810
SI	198804	198810
RI/FS	199205	199205
RA(C)	200308	200512
LTM	200601	203512

RC: 200512

The RI was completed in 1994. This site was included in the Nine Sites ROD signed in October 1996. Information to date indicates that perchlorate-containing munitions were not disposed of at this site.

This site is associated with MMRP site SIAD-007-R-01. The selected action is institutional controls and access restrictions (fencing and signage). This was completed in FY05.

CLEANUP STRATEGY

The institutional controls will be documented in the Installation Master Plan.

SIAD-022
OLD POPPING FURNACE

SITE DESCRIPTION

The Old Popping Furnace was located in the northeast corner of the Main Depot and encompassed a small area just west of the entrance of the Lower Burning Ground (SIAD-010). The site is ~1,000 x 1,000 ft (23 acres). This area was used during the 1950s for the demilitarization of small-arms ammunition. Some of the metal fragments from this activity remain on the surface today. In accordance with regulatory requirements at the time, this furnace was operated without air emissions controls, and contamination spread over approximately 15 acres.

The RI indicated elevated concentrations of metals (primarily lead) in soil and elevated concentrations of naturally occurring arsenic in groundwater. The RI/FS and PP were finalized in 2004. The Three Sites ROD was signed in 2005.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: High

CONTAMINANTS OF CONCERN: Metals

MEDIA OF CONCERN: Soil,

PHASES	Start	End
PA	198810	198810
SI	198810	198810
RI/FS	199703	200507
RD	200308	200507
RA(C)	200308	200606
LTM	201101	203606

RC: 200607

CLEANUP STRATEGY

The proposed remedy is to consolidate lead-contaminated soil into an on-site CAMU. It is anticipated the construction of the CAMU will be completed by May 2006.

The CAMU will require long-term management which includes CAMU maintenance, groundwater monitoring and five-year reviews.

SIAD-058
SIAD FINAL CLOSEOUT

SITE DESCRIPTION

This AEDB-R site was opened to address an installation-wide summary status document, installation-wide well abandonment and an installation-wide groundwater monitoring plan.

CLEANUP STRATEGY

The installation-wide summary status document is expected to be completed in 2012.

STATUS

REGULATORY DRIVER: CERCLA, Interagency Agreements (2 & 3 Party) Non-NPL Installations

RRSE: High

CONTAMINANTS OF CONCERN: TCE, Explosives

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	198801	199109
SI	199109	199911
RI/FS	200308	200709

RC: 200709

IRP No Further Action Sites Summary

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
SIAD-004	CONSTRUCTION DEBRIS LANDFILL	Study Completed, No Cleanup Required	199511
SIAD-005	CHEMICAL BURIAL SITE	Study Completed, No Cleanup Required	199511
SIAD-009	AMMUNITN DEMITARIZATN & RENOVATN AREA	Study Completed, No Cleanup Required	199511
SIAD-011	DIESEL SPILL AREA	All Required Cleanup(s) Completed	200306
SIAD-012	BLDG 1003 AREA	Study Completed, No Cleanup Required	199511
SIAD-015	LARGE SEWAGE TREATMENT PONDS	All Required Cleanup(s) Completed	199806
SIAD-016	LOWER BURNING GROUND	All Required Cleanup(s) Completed	199909
SIAD-017	NIKE MISSILE FUEL DISPOSAL SITE A	Study Completed, No Cleanup Required. Site went to a ROD with NFA	199501
SIAD-018	NIKE MISSILE FUEL DISPOSAL SITE B	Study Completed, No Cleanup Required. Site went to a ROD with NFA	199501
SIAD-019	TOXICS STORAGE AREA AT BLDG 578	Study Completed, No Cleanup Required. Site went to a ROD with NFA	199501
SIAD-021	EXISTING POPPING FURNACE	Site remediated under RCRA	198810
SIAD-024	AMMUNITION HAZARD TEST SITE	EPA walk through excluded site	199008
SIAD-025	“K” BLOCK AREA	EPA walk through excluded site	199008
SIAD-026	AMMO MAINTENANCE (BLDG #640)	EPA walk through excluded site	199008
SIAD-027	ABANDONED LANDFILL #2	EPA walk through excluded site	199008
SIAD-028	TRANSFORMERS-250 ON INSTALLATION	Tested and inspected regulary; removed from service periodically	199008
SIAD-029	HOSPITAL (BLDG #150)	EPA walk through excluded site. Investigations completed, NFA	199806
SIAD-031	STORAGE SILOS	EPA walk through excluded site	199008
SIAD-032 SIAD-033	BUILDING #T-79 POSSIBLE BURIAL SITE	Soils removed under SAID-003 EPA walk through excluded site	199008 199008

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
SIAD-034	SEPTIC TANKS/LEACH FIELDS	EPA walk through excluded site. USACHPPM sampled SW Septic Area. NFA	199008
SIAD-035	STORAGE IGLOOS (8)	EPA walk through excluded site	199008
SIAD-036	BLG 75 & 79 AREA	EPA walk through excluded site	199008
SIAD-037	DIESEL SUMP AREA	Site is being investigated under the Abandoned Landfill site	199611
SIAD-038	NORTHWEST WAREHOUSE AREA	Study Completed, No Cleanup Required	199902
SIAD-039	SMALL SEWAGE TREATMENT PONDS	Study Completed, No Cleanup Required	199908
SIAD-042	SW-AREA	All Required Cleanup(s) Completed	199903
SIAD-056	STRATEGIC ORE PILES	Not Eligible for ER,A/BRAC Funding	199902
SIAD-057	INSTALLATION WIDE GW PLUME	Study Completed, No Cleanup Required	199911

Initiation of IRP: 1988

Past Phase Completion Milestones:
The following is the schedule of IRP work completed to date and planned through completion of all restoration work.

1988
- MEP - October

1989
- IRP Public Participation Plan - April

1991
- RI Group I - September
- Federal Facility Site Remediation Agreement - September

1992
- RI Group II - July
- FS Group II EFFTF (SIAD-007) - December

1993
- RI Group I Follow-up - April
- FS Group II EFFTF (SIAD-007) - April
- FS TNT Leaching Beds Area and
- Diesel Spill Area- Soil (SIAD-001, 011) - May
- PP Group II EFFTF (SIAD-007) - July
- FS TNT Leaching Beds Area and Diesel Spill Area- Groundwater - April

1994
- Diesel Still Area FS (SIAD-011) - March
- RIP for EFFTF (SIAD-007) - April
- PP Group I & III A Sites “Seven Sites” (TNT, DSA, & Group IIA Sites) - May
- RI Group III A Sites (OFT, FDA, FBA, TSA, UDP) - June
- RI Group III B Sites (STP, LBG, DMA) - June
- ROD Group II EFFTF (SIAD-007) - September
- RI Group I & II Follow-up (ADRA & B1003) - December

1995
- FS Group III B Sites - April
- FS Group I & II Follow-up Sites - April
- RI Group I Follow-up Continuation (DRMO & ALF) - May
- PP (ADRA) - May
- RI Group III C Site (B210) - September
- ROD “Seven Sites” - September

Schedule

1996
- FS Building 1003 (SIAD-012) - February
- RIP for TNT Leaching Beds Area - Groundwater (SIAD-001) - February
- DRMO Trench Area Follow-Up RI (SIAD-002) - June
- Nine Sites ROD – October
-

1997
- DRMO Trench Area FS - January
- RI/FS Old Popping Furnace (SIAD-022) - February
- PP for DRMO (SIAD-002) - July
- RIP for TNT Leaching Beds Area - Soil (SIAD-001) - December

1998
- ROD for DRMO Trench (SIAD-002) - March
- Large Sewage Treatment Pond Closure Report (SIAD-015) - June
- Building 1003 Closure Report (SIAD-012) - June
- Building 210 Pilot Study (SIAD-014) - August
- RIP for Paint Shop Subsite (SIAD-001B) - September
- Explanation of Significant Difference for DSA (SIAD-011) - December

1999
- SIAD-002, Soil Removal - December

2000
- SIAD-014 Action Memorandum for Pump and Treat - June
- SIAD-014 Initiated Removal Action, Pump and Treat - June
- SIAD-002, Soil Vapor Extraction - September

2001
- SIAD-014 Enhanced Biodegradation Pilot Study - October
- SIAD-003 RI - June
- SIAD-010 RI - June

2002
- SIAD-014, Zero Valent Iron Pilot Study - July
- SIAD-014, Further Characterization of Plume - January
- SIAD-010, Characterization of Hansen's Hole - January
- SIAD-011, Diesel Spill Area, RC - December
- SIAD-059, Unidentified Pit, RC - June

2003
- All open IRP sites were included in a PBC contract with ARCADIS

2004

- FFS UBG (SIAD-010) - April
- FFS Bldg 79 Equipment Yard (SIAD-003) - April
- Final RI/FS OPF (SIAD-022) – April
- PP “Three Sites” (SIAD-003, 010, 022) - April
- SIAD-001 and 002, Initiation of IRZ Demonstration Program – June
- SIAD-010, 022 and part of 003, Three Sites ROD to regulatory agencies - June
- SIAD-003 and 014, Initiation of IRZ Pilot Study - July
-

2005

- SIAD-014, Nano-scale Zero Valent Iron pilot test - April
- SIAD-003, 010,022, implement ROD – July thru. Sept
- SIAD-003, 014, continue IRZ pilot studies

Projected ROD/DD Approval Date: None

Schedule for Next Five-Year Review: SIAD-001, -002 due in 2006.

Estimated Completion Date of IRP (including LTM phase): 2036

SIERRA ARMY DEPOT IRP IAP SCHEDULE

(Based on current funding)

AEDBR#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
SIAD-001	LTM									*202501*
SIAD-002	LTM									*203101*
SIAD-003	LTM									*203601*
SIAD-010	LTM									*203606*
SIAD-014	LTM									*203601*
SIAD-020	LTM									*203512*
SIAD-022	LTM									*203606*
SIAD-PBC	RA(C)									
	LTM									

Prior Years Funds
Total Funding up through FY05: $63,414 (includes Active and BRAC)

Current Year Funds (Active)

Year	Site Information	Expenditures	FY Total
FY06		$2,133K	**$2,133K**

Total Funding FY06: $2,133K (Active)

Current Year Funds (BRAC)

Year	Site Information	Expenditures	FY Total
FY06	RD - SIAD-001-R-01	$2,779K	**$2,779K**

Total BRAC Funding FY06: $2,779K (BRAC)

Total Funding for FY06: **$4,912K (Active and BRAC)**

Total Future Requirements: **$15,822K (Active)**
Total Future Requirements: **$12,630K (BRAC)**

Total IRP and BRAC Program Costs: **$86,778K**

SIERRA ARMY DEPOT

Military Munitions Response Program

MMRP Summary

AEDB-R MMRP Sites/Sites RC: 12/6 (4 sites transferred to BRAC Program)

AEDB-R Site Types:
2 Firing Ranges 2 Small Arms Ranges
5 Open Burn 2 Unexploded Munitions/Ordnance
1 Explosive Ordnance Disposal Area

Contaminants of Concern: MEC

Media of Concern: Groundwater, Soil

Completed REM/IRA/RA: None

Total MMRP Funding:

Prior years (thru FY05):	$ 100K
Current Year (FY06):	$ 210K
Future Requirements (FY07+):	$71,650K
Total:	$71,960K

Duration of MMRP:
Year of MMRP Inception: 2000
Year of RA Completion: 2013
Year of MMRP Completion: 2047

MMRP Contamination Assessment

Contamination Assessment Overview:

Thirteen sites were identified during the MMRP range inventory. Four of those sites are considered Response Complete and no further action is required. One site is being addressed under the BRAC program. It is not known at this time if off-post contamination exists at any of the identified sites.

The SI at each site began in July 2004 and ended in December 2005.

Cleanup Exit Strategy:

Additional RI is planned. RA, including waste removal, may be needed for the remaining nine sites.

Previous Studies

2003

- Final US Army Closed, Transferring and Transferred Range/Site Inventory for Sierra Army Depot, CA, TechLaw Inc., September

2005

- Historical Records Review, May
- Site Inspection Report, August

SIERRA ARMY DEPOT

Military Munitions Response Program Site Descriptions

SIAD-006-R-01
.50 CALIBER FIRING RANGE

SITE DESCRIPTION

The range fan for the .50 Caliber Firing Range, located in the northwest portion of the Main Depot Area, was shortened in 1997 to function as an active 7.62 mm range, leaving a closed section of the range fan. Because a map of the new 7.62 mm range fan was unavailable, the size of the range fan was estimated based on current regulations. The range fan for the .50 Caliber Range extends from east to west, with the furthest extent of the range fan situated on property that has been transferred to the Lassen Reuse Authority under BRAC. The BRAC property is not included in the estimated acreage listed for this site. The majority of this range is covered by Honey Lake Demolition Range C. This range was used from approximately the 1960s to 1997. No known munitions response actions or clearances have been conducted at this site. The size of this site has been estimated at approximately 5 acres. The area is currently undeveloped.

STATUS

REGULATORY DRIVER: CERCLA

RAC SCORE: 3 - Moderate Risk

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200301	200305
SI	200407	200512
RI/FS	200910	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional RI is planned. RA, including waste removal, may be needed.

SIAD-007-R-01
1960 DEMOLITION AREA

SITE DESCRIPTION

This closed site is located in the west-central portion of the Main Depot. According to a 1994 Remedial Investigation Report, this site consists of a large rectangular area measuring approximately 3,000 feet by 2,000 feet, containing 24 elongated surface depressions (trenches) arranged in two rows, which were created by detonated bombs. The depressions have very steep-sided berms, devoid of vegetation, that are deep, incised by erosional gullies. An abundance of scattered metal debris, including jagged pieces of steel bomb fragments, lies on the surface of the site.

This site was developed in 1960 when the Upper Burning Ground demolition area was closed for construction. During 1960 and 1961, thirty-six 500-pound bombs (per detonation), were detonated at a rate of 12 times per day (432 bombs per day). CS tear gas grenades were also detonated at a rate of 200 to 248 pounds per day for a three-month period in 1961. During the 1970s, NIKE Hercules XM-30 motors were fired in silos on the site. The solid-based propellant was burned in the silos during the firings. The RI/FS for this site was completed in 1996. Contaminants of Concern included UXO, metals, explosives, and CS tear gas. RDX was also detected in surface soils. Although the IRP did address UXO for the portion of the site discussed in the IAP, only a visual inspection was conducted, the UXO was not removed and the cost to complete did not include UXO. This site was included in the Nine Sites ROD signed in October 1996. According to the AEDB-R database information provided by AEC, the IRP phase for this site is Remedial Action (Construction). The site will be fenced in fall/winter 2004. The size of this site has been estimated at approximately 80 acres. The site is currently undeveloped.

STATUS

REGULATORY DRIVER: CERCLA

RAC SCORE: 1 - High Risk

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200301	200305
SI	200407	200512
RI/FS	200710	200909
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional RI is planned. RA, including waste removal, may be needed.

SIAD-009-R-01
HAZARDOUS CLASSIFICATION TEST SITE

SITE DESCRIPTION

This closed site in the eastern portion of the Main Depot Area was also known as an ammunition hazard test site. A small portion of this site is covered by the range fan of an active 7.62 mm range. A larger portion covering the northwest corner of the range falls within the boundary of Honey Lake Demolition Range C (Range C). The munitions used in Range C take precedence over those used at this site; consequently, the overlapping acreage is included with Range C. According to a 1979 Installation Assessment, this area was used to blow/burn 8-inch, 40mm, 135mm, CBU (cluster bombs), and other conventional munitions for test purposes. According to a 1983 Reassessment report, activities conducted at this site were designed to evaluate the fire capabilities and disposal procedures for improved conventional weapons. The hazard test site was used approximately three to four months per year, and all metal generated during the operations was collected and sent to the Defense Property Disposal Office for disposal. SIAD staff stated that cluster bombs were demolished at this closed site from 1969-1973 and the site is heavily contaminated with scrap metal. The site is locked near a road, which had been transferred to the state under BRAC. Under the IRP, a Site Investigation and a Remedial Investigation/Feasibility Study have been completed for this site. According to SIAD, the EPA has conducted a walkthrough at the site and determined that the site did not warrant any further investigation. The site is considered to be Response Complete and is currently undeveloped. Although the area is not fenced at this time, there are plans to build a fence around its perimeter in the near future. The size of this site has been estimated at approximately 163 acres.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 - Serious Risk

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200301	200305
SI	200407	200512
RI/FS	200710	200909
RD	201110	201204
RA(C)	2012305	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional RI is planned. RA, including waste removal, may be needed.

SIAD-010-R-01
HONEY LAKE DEMOLITION RANGE C

SITE DESCRIPTION

This closed range (Range C) is located along the western boundary of the installation. Range C lies within the maximum fragment arc of Honey Lake Demolition Range and comprises approximately one-quarter of the entire demolition range. The rest of the demolition range falls within BRAC property. Range C overlaps the western portions of the Hazard Classification Test Site and the .50 Caliber Range and takes precedence over them. Range C was used from 1945 to approximately 1958, with the most frequent use during the 1940s. The Hazard Classification Test site was used from 1969 to 1973 and the .50 Caliber Range was used from 1960 to 1997.

The entire Honey Lake Demolition Range was evaluated in 1996 as part of an Archive Search Report (ASR). The ASR team conducted a site visit and observed demolition range fragments on the extreme western edge of Range C. They also observed fragments further inland that were the result of the Hazard Classification Test Site, which is within this area. While 105mm HE shells were the most common item destroyed at the site, other typical munitions that were detonated or burned at the Honey Lake Demolition Range include .30, .45, and .50 Caliber rounds (ball, tracer, and incendiary); 20mm High Explosive Incendiary cartridges; 60mm and 81mm Mortars, High Explosive (HE) and White Phosphorous (WP) Smoke; 75mm HE and WP Smoke shells; 105mm HE shells; 2.36-inch HE Anti-tank (bazooka) and WP Rockets; 4.5-inch HE rockets; Fragmentation, Hexachloroethane (HC) Smoke, Red Smoke, and WP smoke hand grenades; WP and Antitank Rifle Grenades; Bangalore Torpedoes, Anti-personnel and Anti-tank mines; Pyrotechnics; and General Purpose, Cluster, and Fragmentation bombs; fuzes; loose explosives; bulk high explosives; ballistite powder; black powder; and propellant. The Hazard Classification Test Site was used to blow/burn 8-inch, 40mm, 135mm, bombs, and other conventional munitions for test purposes.

The Hazard Classification Test Site is listed in AEDB-R as Site SIAD-024. This is the only portion of Range C that is in AEDB-R. The site is currently undeveloped. Although the area is not fenced at this time, there are plans to build a fence in the near future. The size of the site has been estimated at approximately 767 acres.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 1 - High Risk

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200301	200305
SI	200407	200512
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional RI is planned. RA, including waste removal, may be needed.

SIAD-012-R-01
LOWER BURNING GROUND (PAGE 1 OF 2)

SITE DESCRIPTION

The Lower Burning Ground (LBG) is located near the northeast corner of the Main Depot and encompasses a large, irregularly shaped area that measures approximately 5,300 feet by 1,800 feet, as well as several open pits and associated soil mounds in the northern area. The site also includes a rectangular-shaped southern portion identified as Interim Burning Area A. LBG was used from 1946 until the late 1980s for burning munitions and various pyrotechnics, in pits and on the ground surface. Interim Burning Area A was used in 1960 and 1961 while the Upper Burning Ground was being renovated, and may have been used until as late as 1974. According to USATHAMA (1979) items burned or detonated at the various sites include: HE-filled projectiles; fragmentation bombs; rocket warheads and inert-loaded items; primers, small arms ammunition; canister mines, various CBU munitions, 8-inch, 155mm, 105mm, and smaller munitions; fuzes; bombs; grenades, pyrotechnic items; and other HE-filled munitions. Materials burned at Interim Burning Area A include projectiles containing trinitrotoluene (TNT) and "composition B", trash contaminated by explosives, and fuses containing lead compounds. USATHAMA (1979) reported that white phosphorous was not burned at the site.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 1 - High Risk

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200301	200305
SI	200407	200512
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

In addition, a variety of materials have reportedly been dumped at the LBG. This site is included in AEDB-R as Site SIAD-016. According to the 2002 Installation Action Plan (IAP), the materials included explosives, waste products generated during demilitarization operations including primers, charges, waste rags, and solvents; powder projectiles; and other munitions. During a site visit by Harding Lawson Associates, conducted in 1992 as part of the remedial investigation, it was determined that small metal debris, including spent ordnance casings were scattered throughout the site. There were also metal signs stating "Flashed Scrap Metal Buried Here" in the western-central area.

Much of the burning and dumping at the LBG was reportedly performed in pits. Metal debris and scrap were removed periodically from the pits and sent to the area currently identified as the Defense Reutilization and Marketing Office (DRMO) trench area, which is being investigated as part of the Group 1 sites RI/FS. After removal of salvageable material, the pits were backfilled and covered. The LBG contains an open trench 200 feet long by 35 feet wide by 10 feet deep where demilitarization and industrial wastes have been burned or dumped. This trench has been the site of previous soil investigations.

SIAD-012-R-01
LOWER BURNING GROUND (PAGE 2 OF 2)

According to the IAP, the RI/FS was completed in 1996 and this site was included in the Nine Sites ROD signed in October 1996. The selected action, listed in both the ROD and the IAP, was the creation of access restrictions by adding institutional controls to the Installation Master Plan. Contaminants of concern addressed in the IAP include UXO, explosives, metals, TPH, and organics. According to results reported in the Draft ROD, arsenic and chromium posed a potentially unacceptable risk to human health for a hypothetical future resident. Low levels of TNT and RDX were detected in one sample at low concentrations. After discussions with AEC, it was determined that the actions under the ROD did not meet present guidelines in relation to UXO, DMM, or MC and therefore portions of the site qualify under MMRP. The size of this site has been estimated at approximately 1,315 acres. The site is currently undeveloped.

CLEANUP STRATEGY

Additional RI is planned. RA, including waste removal, may be needed.

SIAD-013-R-01
ALPHA TEAM TRAINING AREA

SITE DESCRIPTION

The Alpha Team Training Area consists of approx. 14 acres located eat of the operational EOD Training Area and south of the 1960 Demolition Area. This MR site was identified during SI field work. Three practice bombs were found at the site, but no additional SI work was conducted because of contract's scope of work.

CLEANUP STRATEGY

Additional RI is planned. RA, including waste removal, may be needed.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 3 - Moderate Risk

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200301	200305
SI	200407	200512
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

MMRP No Further Action Sites Summary

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
SIAD-001-R-01	HONEY LAKE DEMOLITION RANGE A	This site is now under the BRAC Program	N/A
SIAD-002-R-01	.50 CAL RANGE	This site was transferred to the BRAC Program	200305
SIAD-003-R-01	HONEY LAKE DEMOLITION RANGE B	This site was transferred to the BRAC Program	200305
SIAD-004-R-01	AERIAL P-12 GUNNERY RANGE	This site was transferred to the BRAC Program. Study Completed. No Cleanup Required.	200103
SIAD-008-R-01	BLOCK C	No contamination found during SI.	200512
SIAD-011-R-01	RIFLE RANGE D	No contamination found during SI.	200512

Schedule

Initiation of MMRP at Installation: 2003

Past Phase Completion Milestones:

2003
- PA for all MMRP sites, May

2005
- SI for SIAD-006-R-01, 007-R-01, 008-R-01, 009-R-01, 010-R-01, 011-R-01 and 012-R-01, December

Projected ROD/DD Approval Date: Unknown

Schedule for Five Year Reviews: Unknown

Estimated Completion Date of MMRP (including LTM phase): 2047

SIERRA ARMY DEPOT MMRP SCHEDULE

(Based on current funding)

AEDBR#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
SIAD-006-R-01	RI/FS									
	RD									
	RA(C)									
	LTM									*204709*
SIAD-007-R-01	RI/FS									
	RD									
	RA(C)									
	LTM									*204709*
SIAD-009-R-01	RI/FS									
	RD									
	RA(C)									
	LTM									*204709*
SIAD-010-R-01	RI/FS									
	RD									
	RA(C)									
	LTM									*204709*
SIAD-012-R-01	RI/FS									
	RD									
	RA(C)									
	LTM									*204709*
SIAD-013-R-01	RI/FS									
	RD									
	RA(C)									
	LTM									*204709*

Prior Years Funding
Funding up to FY04: $18,737K

Year	Site Information	Expenditures	FY Total
FY05	SI - All Sites	$81K	**$81K**

Total Funding Thru FY05: $18, 818K

Current Year Funds

Year	Site Information	Expenditures	FY Total
FY06	SI (expected)	$210K	**$210K**

Total Funding FY06: $210K

Total Future Requirements: **$71,650K**

Total MMRP Program Costs: **$71,960K**

SIERRA ARMY DEPOT

Base Realignment and Closure Program

BRAC Summary

AEDB-R BRAC Sites/Sites RC: 17/16

AEDB-R Site Types:

1 Contaminated Building
2 Fire/Crash Training Areas
1 Landfill
2 Spill Site Areas
3 Unexploded Munitions/Ordnance
1 Disposal Pit/Dry Well
3 Firing Ranges
2 Open Burn
2 Storage Areas

Contaminants of Concern: DMM

Media of Concern: Soil

Completed REM/IRA/RA: None

Duration of BRAC:

Year of BRAC Inception: 1995
Year of RA Completion: 2014
Year of BRAC Completion (including LTM): 2034

BRAC Contamination Assessment

Contamination Assessment Overview:

The only site remaining for BRAC is SIAD-001-R-1, Honey Lake. This site is part of 2 parcels, the East Shore and the Honey Lake Munitions and Explosives of Concern (MEC) Area. Combined, the whole area is known as the Former Honey Lake Demolition Range (FHLDR).

A Munitions and Explosives of Concern (MEC) Response Action has been completed on the East Shore in 2005. The MEC Response Action was a clearance to depth of detection. All actions on the East Shore are complete. The Army is waiting for the Lassen County Local Reuse Authority (LCLRA) so sign the deed for the remaining 136 acres.

An Engineering Evaluation/Cost Analysis (EE/CA) has been drafted for the Honey Lake Dry Lake Area, which is 4,486 acres. The EE/CA has been reviewed by the California Department of Toxic Substances Control (DTSC), the California State Lands Commission (SLC), and the Honey Lake Conservation Team (HLCT). Comments have been addressed and the EE/CA recommendation is to perform a surface clearance on the Open Burning/Open Detonation (OB/OD) and Buffer Sectors and put institutional controls in place for the entire Honey Lake Dry Lake Area. The estimated cost is $2.9M. It is planned to finalize the EE/CA in FY06 and implement the selected remedy in the spring of FY07. The Army is currently evaluating the DTSC/SLC proposed actions. Currently the Honey Lake Dry Lake Area is leased to the HLCT under a Lease in Furtherance of Conveyance and 4,486 acres will be transferred by deed in FY10 to the Center for Urban Watershed Renewal for eventual transfer to the SLC.

Cleanup Exit Strategy:

Only one BRAC site (SIAD-001-R-01) is still receiving funding and is expected to be RIP during FY10. A Record of Decision (ROD) and Proposed Plan (PP) for the FHLDR have been drafted and are currently waiting for the final negotiated resolution to the EE/CA before undergoing Army review. The selected action is No Further Action for the East Shore Area and the recommended actions for the Dry Lake Area described above. They will be reviewed by the regulators and then undergo the public review and comment along with the EE/CA.

Previous Studies

See list in the IRP Section.

SIERRA ARMY DEPOT

Base Realignment and Closure Program
Site Description

SIAD-001-R-01
HONEY LAKE DEMOLITION RANGE A

SITE DESCRIPTION

Demolition of excess, obsolete, and unserviceable munitions took place on this site between 1945 and 1958. This range has been divided into several parcels for transfer; the North East Shore, West Airfield, and North Cross Depot and Honey Lake OE parcels. The removal action for the first three parcels was completed in 2005 and the transfer to Lassen County will be completed in 2006.

The Honey Lake OE Parcel consists of 4,486 acres on the lakebed. The parcel is a former OB/OD area. This parcel will be transferred to the Center for Urban Watershed Renewal.

CLEANUP STRATEGY

DMM clearance at Honey Lake OE Parcel will be conducted through FY14, and the five-year reviews will be conducted through 2034.

STATUS

REGULATORY DRIVER: CERCLA

PROGRAM: MR

RAC SCORE: 4 - Low Risk

CONTAMINANTS OF CONCERN: DMM

MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	200001	200005
RI/FS	200209	200609
RD	200603	201212
RA(C)	201301	2014809
LTM	201409	203409

RC: 201409

BRAC No Further Action Sites Summary

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
SIAD-002-R-01	.50 CAL RANGE	This MMRP site is under the BRAC Program	200305
SIAD-003-R-01	HONEY LAKE DEMOLITION RANGE B	This MMRP site is under the BRAC Program	200305
SIAD-004-R-01	AERIAL P-12 GUNNERY RANGE	This MMRP site is under the BRAC Program	200103
SIAD-006	COMP-HONEY LAKE-UXO	Site closed due to conversion from UXO flagged sites to MMRP sites, July 2003	200304
SIAD-007	EXISTING FIRE-FIGHTING TRAINING FACILITY	All Required Cleanup(s) Completed	200002
SIAD-008	EXISTING SANITARY LANDFILL	Site is an active landfill	198810
SIAD-013	OLD FIRE-FIGHTING TRAINING FACILITY	Study Completed, No Cleanup Required	199501
SIAD-023	COMP SURVEILANCE TEST RANGE	Site is included inside Honey Lake UXO area.	200002
SIAD-030	RIFLE/PISTOL RANGE	Moved lead berm to active depot range. Property transferred to Bureau of Prisons	199902
SIAD-040	PIT AT SOUTHEAST EDGE OF HONEY LAKE	Study Completed, No Cleanup Required	199501
SIAD-041	COMPLIANCE DU IGLOOS	All Required Cleanup(s) Completed	200112
SIAD-043	AIR STRIP REFUEL APRON	Study Completed, No Cleanup Required. Contaminant levels too low to score.	199902
SAID-044	RANGE LEAD/DEBRIS AIRSTRIP AREA	Study Completed, No Cleanup Required	199808
SAID-045	AIRSTRIP DIESEL SPILL	Study Completed, No Cleanup Required	199902
SAID-046	COMPLIANCE DU STORAGE AREAS	All Required Cleanup(s) Completed	200112
SIAD-051	COMPLIANCE ASBESTOS BRAC PARCEL	Study Completed, No Cleanup Required	199703

Schedule

Initiation of BRAC at Installation: 1995

Past Phase Completion Milestones:

2000
PA SIAD-001-R-01, May

2006
RI/FS SIAD-001-R-01, September

Projected ROD/DD Approval Date: 2007

Projected Construction Completion: 2014

Schedule for Five Year Reviews: 2012

Estimated Completion Date of BRAC (including LTM phase): 2034

SIERRA ARMY DEPOT BRAC SCHEDULE

(Based on current funding)

AEDBR#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
SIAD-001-R-01	RA(C)									
	LTM									203409

Prior Years Funds
Total Funding up through FY05: $63,414 (includes Active and BRAC)

Current Year Funds (Active)

Year	Site Information	Expenditures	FY Total
FY06		$2,133K	**$2,133K**

Total Funding FY06: $2,133K (Active)

Current Year Funds (BRAC)

Year	Site Information	Expenditures	FY Total
FY06	RD - SIAD-001-R-01	$2,779K	**$2,779K**

Total BRAC Funding FY06: $2,779K (BRAC)

Total Funding for FY06: **$4,912K (Active and BRAC)**

Total Future Requirements: **$15,822K (Active)**
Total Future Requirements: **$12,630K (BRAC)**

Total IRP and BRAC Program Costs: **$86,778K**

A. Status of Community Involvement

There are 8 community members on the RAB.

B. Determining Interest in Establishing RAB

The Restoration Program at Sierra Army Depot started in 1987. A Federal Facilities Site Remediation Agreement was signed in 1991. Community input was received through a Technical Review Committee (TRC) which had intermittent community attendance from 1993-1996.

1. Efforts Taken To Determine Interest

Restoration Advisory Board (RAB) was unofficially formed in December of 1996. There were a total of eight meetings held in 1997, with the signing of the RAB Charter in October 1997. Surveys have been provided to community members expressing interest. Community members have been interviewed for the update to the Community Relations Plan.

2. Results of Efforts to Determine Interest in a RAB

Response was received from the community and regulatory agencies.

3. Conclusions Concerning Establishing a RAB

The RAB includes 8 community members. Meetings are held 3 times per year. The Charter has been updated in 2004. A copy of the IAP is in the public repositories.